RESOLUTION NO. 1-1994 (GPA-22)

GENERAL PLAN AMENDMENT NO. 22
ADOPT 1993 NOISE AND SAFETY ELEMENTS AND
APPROVE RELATED NEGATIVE DECLARATION.

WHEREAS, Government Code beginning with Section 65300, specifies that Cities shall adopt and periodically update their General Plans; and

WHEREAS, the City of Red Bluff Planning Commission has conducted surveys and studies in connection with the updated Noise and Safety Elements of the General Plan of the City; and

WHEREAS, the Planning Commission did, after conducting public meetings and public hearings, recommend to the City Council the adoption of the updated Noise and Safety Elements, and approval of the related Mitigated Negative Declaration; and

WHEREAS, the City Council did hold a public hearing on the updated General Plan Element and the related Negative Declaration;

NOW, THEREFORE BE IT RESOLVED that the City Council does hereby find that:

The Negative Declaration conforms to CEQA and its Guidelines.

None of the conditions listed in (a) - (d) of Section 15065 of the State CEQA Guidelines exist with regards to the updated Housing Element.

The updated General Plan Element conforms to the provision of the Planning, Zoning and Development Law in the California Government Code Title 7 Division 1 beginning with Section 65000;

This project will not individually or cumulatively have an adverse effect on wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

BE IT FURTHER RESOLVED that the City Council does hereby adopt the 1993 Noise Element and the 1993 Safety Elements including Appendix "A" and "B", and excluding Appendix "C" therein and does approve the related Mitigated Negative Declaration.

PASSED, APPROVED AND ADOPTED at a regular ~~adjourned~~ meeting of the City Council of the City of Red Bluff on February 1 , 1994, by the following vote:

AYES: Councilmembers: Schoelen, Sale, Robison, Trujillo, and Penne.

NOES: None.

ABSENT OR NOT VOTING: None.

MAYOR

ATTEST:

CITY CLERK

This is to certify that the annexed document is a true and correct copy of the original on file in my office.

Attest: FEB 02 1994

SUSAN M. ELSTON, City Clerk
City of Red Bluff
County of Tehama, State of California

CITY OF RED BLUFF GENERAL PLAN
NOISE ELEMENT

October 1993

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CITY OF RED BLUFF

NOISE ELEMENT

Authority and Purpose

The purpose of this Noise Element of the Red Bluff General Plan is to help protect the health and welfare of the community by promoting development which is compatible with accepted noise standards.

Section 65302(b) of the California Government Code requires that a Noise Element be prepared as part of all City General Plans. This State law requires that a jurisdiction, through its Noise Element, identify and work toward elimination of noise problems in the community.

The Government Code (Section 65302(g) specifically requires:

> A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to highways and freeways, ground rapid transit systems, and ground facilities associated with all airports.
>
> These noise contours may be expressed in any standard acoustical scale which includes both the magnitude of noise and frequency of its occurrence. The recommended scale is sound level A, as measured with A-weighting network of a standard sound level meter, with corrections added for the time duration per event and the total number of events per 24-hour period.
>
> Noise contours shall be shown in minimum increments of five decibels and shall be continued down to 65 dBA. For regions involving hospitals, rest homes, long-term medical or mental care, or outdoor recreational areas, the contours shall be continued down to 45 dBA.
>
> Conclusions regarding appropriate site or route selection alternatives or noise impact upon compatible land uses shall be included in the general plan.
>
> The state, local, or private agency responsible for the construction or maintenance of such transportation facilities shall provide to the local agency producing the plan, a statement of the present and projected levels of the facility, and any information that was used in the development of such levels.

This Noise Element recognizes the guidelines established by the State Office of Noise Control and the State Department of Health Services and analyzes current and projected noise levels for highways and major city roadways, railroad operations, aircraft, local industrial plants and other ground stationary sources identified by the local government as contributing to the community noise environment.

The noise level contours and tables presented in this element are required to be used as a guide for establishing a pattern of land uses in the Land Use Element that minimizes the exposure of community residents to excessive noise. The noise element is in a sense a supplementary element in that its standards and proposals are to be superimposed upon, or incorporated with those of the other element plans. In addition to required conformance with the Land Use Element, this Noise Element is in conformance to other elements of the City General Plan, particularly the Housing Element, Safety Element, Circulation Element and Open Space/Conservation (Natural Environment) Element.

This element is also in conformance with the County of Tehama General Plan Noise Element and other local and regional planning documents. The standards and goals of this plan element will also have reference value in the assessment of noise impacts upon the environment which may result from proposed public and private development projects.

Present and future noise levels are shown in this document. They are stated in terms of day/night sound level (Ldn). This is the preferred format for implementing the State of California's Noise Insulation Standards. The following section of this element presents an explanation of the concepts of environmental noise and how it is evaluated.

EFFECTS OF NOISE ON PEOPLE

Hearing Loss When sounds are too intense and prolonged, the hearing receptor cells, or "hair cells", can be damaged. The inner ear (cochlea) is a coiled tube about 34 millimeters long, containing about 17,000 hair cells. Hearing loss can occur along all parts of the cochlea. Thus, the degree of hearing loss depends not only on the severity of injury at any one location, but upon the spread of hearing loss in the inner ear. Hearing loss usually occurs above the speaking ranges and spreads downward. Damage can, therefore, be substantial before hearing loss is noticed.

Most experts believe that noise levels of 70 dBA or more contribute to loss of hearing over a lifetime. Clear evidence is available that noises above 80 dBA can contribute to inner ear damage and eventually hearing loss if they are frequently and regularly encountered. Trucks, trains, sports cars, and motorcycles all exceed 80 dBA at 50 feet. Amplified music at close

range may reach 120 dBA. In industry, excessively loud machinery is common.

Speech and Sleep Interference Speech interference begins occurring at about 40-45 dBA and becomes severe at 60 dBA and above. Excessive background noise can reduce the amount and quality of verbal exchange and adversely affect education, family life-styles, occupational efficiency, and the quality of one's relaxation.

To protect a person from sleep interference sound levels should not rise above 35-40 dBA. Whether a person is actively awakened by a particular noise will depend upon noise levels, characteristics of the noise, stage of sleep, the person's motivation to awaken, age, sex, and so on. Elderly people and persons who are ill are particularly susceptible to sleep interference caused by noise.

Stress Inducement Noise as a source of stress is a likely contributor to what many medical authorities believe are stress-related diseases such as ulcers, high blood pressure, heart disease, and arthritis. As a source of stress, noise may also be a contributing factor in mental illness, anxiety, and psychological distress. This distress, in turn, can lead to instability, sexual impotency, headaches, nausea, general anxiety, and changes in general mood.

Performance and Learning Work performance can be adversely affected by noise through distraction and through the physical reactions previously described. While noise does not seem to have an affect on overall work productivity, it can reduce accuracy of work, particularly of complex tasks, and inhibit learning. Even if it does not do this, the price may be increased fatigue, distraction, and irritability on the part of the employee or student. Studies conducted in Europe recommend 55 dBA as an upper limit for peak-interfering noise in classrooms.

Annoyance Many factors affect how annoyed people will be by environmental noise. A first consideration is the characteristics of the noise itself including loudness, duration, steadiness, or whether it contains speech or music. Secondly, background noise levels affect the determination of how intrusive a particular noise is perceived. Thirdly, the time of day and seasonal variations can make a difference. People are most likely to be disturbed at home, at night, and during warm weather.

The number of people disturbed by noise generally goes up as noise levels increase. Predicting annoyance responses to noise in particular situations is difficult. Individuals who complain are generally not unusually physically sensitive to loud sounds. They do tend to have higher incomes and levels of education than those who do not complain. Community wide annoyance responses also depend on leadership within the community and a total sense of community by the population.

Complaints are not, then, a very good criteria to apply in setting protective noise standards. As a result, criteria based on the harmful and disturbing effects of noise on persons have emerged as more objective, measurable, and protective approaches to the problem of setting noise standards.

Measurement and Management of Environmental Noise

Sound travels through the air as waves of minute air pressure fluctuations caused by some types of vibrations. In general, sound waves travel away from the noise source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away form the source. The result is a decrease in loudness at greater distances from the noise source.

The human ear is subject to a wide range of sound intensities and people hear changes in sound in proportion to those intensities. The **decibel** (dB) scale is a logarithmic scale used to compress this range. The threshold of human hearing corresponds roughly to 0 db. Figure 1 shows the sound levels of typical sources encountered in the environment. The "A" weighting scale, that which most closely resembles human hearing, is used in this plan and is noted by the symbol **(dBA)**.

Varying noise levels are often described in terms of the equivalent constant decibel level. Equivalent noise levels **(Leq)** are used to develop single-value descriptions of average noise exposure over various periods of time. Such average exposure ratings often include additional weighting factors for annoyance potential because of time of day or other considerations. In this general plan, the time-varying character of environmental noise is described as **(Ldn)**. This is a statistical weighting of daytime and nighttime noises and is used as the basis noise impact evaluation and for land use planning criteria.

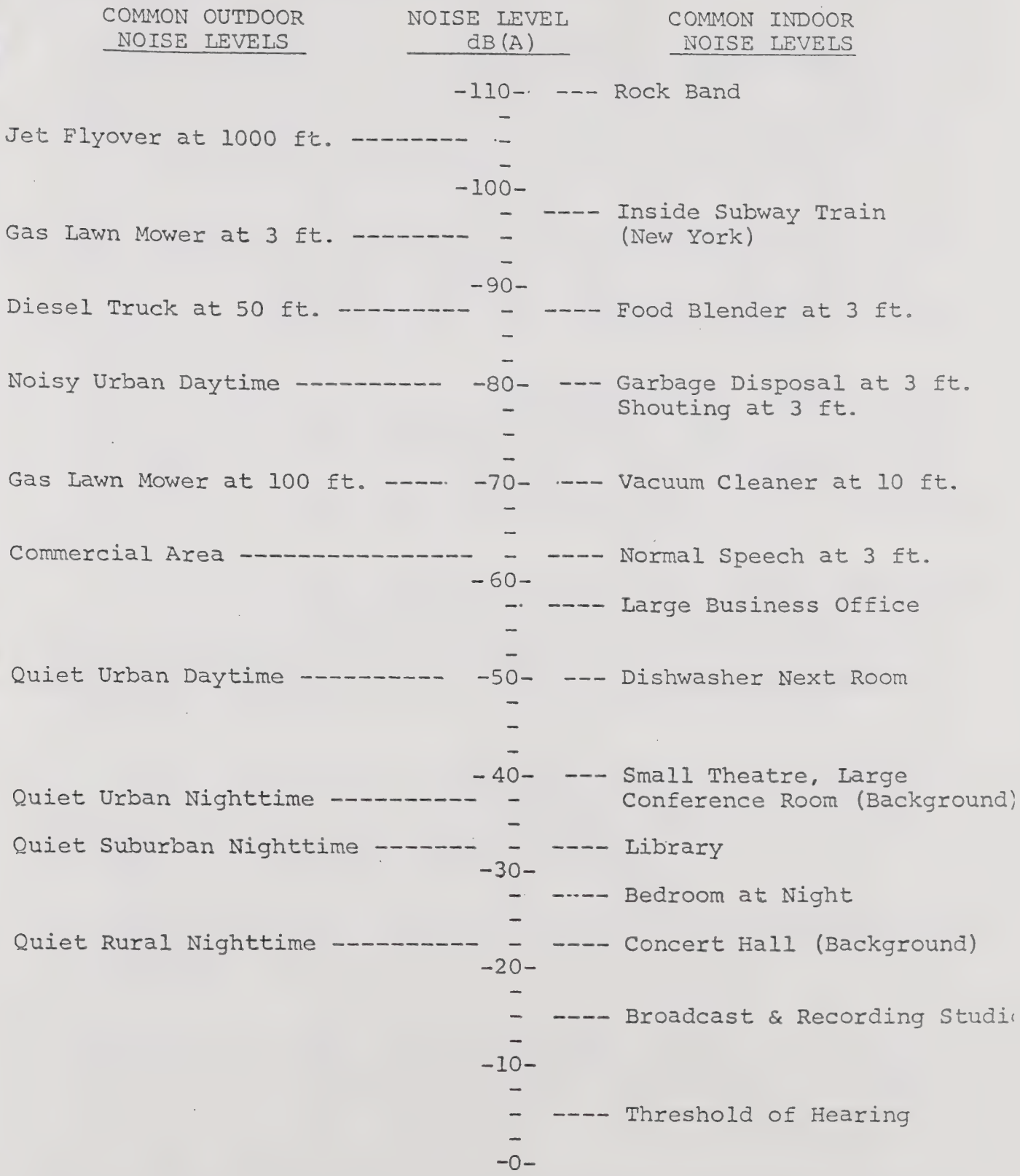
Ambient noise levels constitute the composite from all sources far and near. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Parameters used when estimating traffic noise relate to the traffic, the roadway and the receiver. Traffic parameters affecting noise are the number and type of vehicles passing a point during a particular time period and the average speed of the vehicles. Roadway variables include its surface, gradient and geometry.

Highway noise increases as the number and average speed of automobiles on it increases. For example, if the automobile traffic volume doubles, the noise level from those autos increases by about 3 dbA. However if the speed decreases to half, the noise level from autos decreases by about 6 dbA. The engine-

Figure 1.

COMMON INDOOR AND OUTDOOR NOISE LEVELS



Source: "Guide on Evaluation and Attenuation of Traffic Noise", Author and Publisher: American Association of State Highway and Transportation Officials.

NOTE: A ten (10) decibel increase in sound level on dB(A) scale doubles the apparent loudness or annoyance of the sound.

exhaust system and tire roadway interaction contribute prominently to overall automobile noise.

Truck noise behaves differently. Noise from tires, exhaust, intake engine and gears all contribute to the total noise environment. An average truck generates A-levels about 15 dbA higher than the average car. The condition of the truck's muffler is particularly important. Another significant difference between the two vehicle sources is that the main noise from autos is from tires, whereas from heavy trucks it is the exhaust stack.

When distance is the only factor considered, sound levels from an isolated noise source will typically decrease by about 6 db for every doubling of distance from the source. When the noise source is essentially a continuous line (e.g., vehicle traffic on a highway), noise levels decrease by about 3 db for every doubling of distance.

Receiver parameters are those which affect the relationship of the receiver's position to the vehicle-roadway noise source. The distance between the observer and the highway is the most significant factor. The greater the distance, the lower the noise level. Doubling the distance from the highway (for example going from 100 to 200 feet) reduces the average traffic noise at the receiver's position by about 4 to 6 dbA.

Railroad noises may also be measured and compared using Ldn levels as a basis for evaluation. Railway noise is produced by the combination of diesel engine noise and railway car noise. Other variables are distance to the receiver, numbers of train operations, speed of trains and numbers of cars per train. Engine air horns and grade crossing warnings are treated as single event noises.

Noise from overhead aircraft around general aviation airports is evaluated based on the number of daytime and nighttime operations for jet and non-jet take-offs and landings. Ldn contours are drawn which include consideration of aircraft altitude and other surrounding noise sources.

Noise levels are mapped using **Noise Exposure Contours.** They are lines drawn about a noise source which indicate constant energy levels of noise exposure. The contours are usually drawn in Ldn levels.

Numerous criteria have been developed over the years for assessing the acceptability of community noise levels, including many more or less complicated procedures for assessing annoyance.

Federal Agency Guidelines

The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies must administer their programs in a manner that promotes an environment

free from noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given the responsibility for providing information to the public regarding identifiable effects of noise on public health and welfare, publishing information on levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The federal Noise Control Act also directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations.

Although the EPA was given major coordination roles regarding public information and federal agencies, each federal agency retains authority to adopt noise regulations pertaining to agency programs. The EPA, however, can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements. The Occupational Safety and Health Administration retains primary authority for setting workplace noise standards. Because of aviation safety considerations, the Federal Aviation Administration retains primary jurisdiction over aircraft noise standards. These standards apply to evaluation of aircraft noise levels at the Red Bluff municipal airport.

In response to the requirements of the federal Noise Control Act, the EPA has identified indoor and outdoor noise limits to protect public health and welfare (e.g. hearing damage, sleep disturbance, and communication disruption). Ldn values of 55db outdoors and 45 db indoors are identified as desirable to protect against speech interference and sleep disturbance for residential, educational and health care areas. The noise level criterion to protect against hearing damage in commercial and industrial areas is identified as a 24-hour Leq value of 70 db (outdoors and indoors).

The Federal Highway Administration (FHWA) has adopted criteria for determining whether the noise impacts associated with federally funded highway projects are sufficient to justify noise mitigation actions (47 FR 131:29653-29656). The FHWA noise abatement criteria are based on peak-hour Leq noise levels, not Ldn or 24-hour Leq values. The peak 1-hour Leq criteria for residential, educational, and health care facilities are 67 db outdoors and 52 db indoors. The peak 1-hour Leq criterion for commercial and industrial areas is 72 db (outdoors). These criteria would be used if the City of Red Bluff were to participate in federally funded highway projects.

The relationship between peak-hour Leq values and associated Ldn values depends upon the distribution of traffic over the day. A peak-hour Leq value cannot be converted precisely to an Ldn value. However, in areas with heavy traffic, the peak-hour Leq is typically 2 to 4 db lower than the daily Ldn value. In less heavily developed areas, the peak-hour Leq is often equal to the

daily Ldn value. For rural areas with little nighttime traffic, the peak-hour Leq value will often be 3 to 4 db greater than the daily Ldn value. The average difference between the peak-hour and the Ldn level in Red Bluff is about a 2 to 3 db higher peak than Ldn level.

The U.S. Department of Housing and Urban Development has established guidelines for evaluating noise impacts on residential projects seeking financial support under various grant programs (44 FR 135:40860-40866). Sites are generally considered acceptable for residential use if they are exposed to outdoor Ldn values of 65 db or less. Sites are considered "normally unacceptable" if they are exposed to outdoor Ldn values of 65-75 db and completely unacceptable if outdoor Ldn values are above 75 db. These criteria must be considered when the City of Red Bluff evaluates potential sites for federally funded housing projects.

State Guidelines and Local Standards

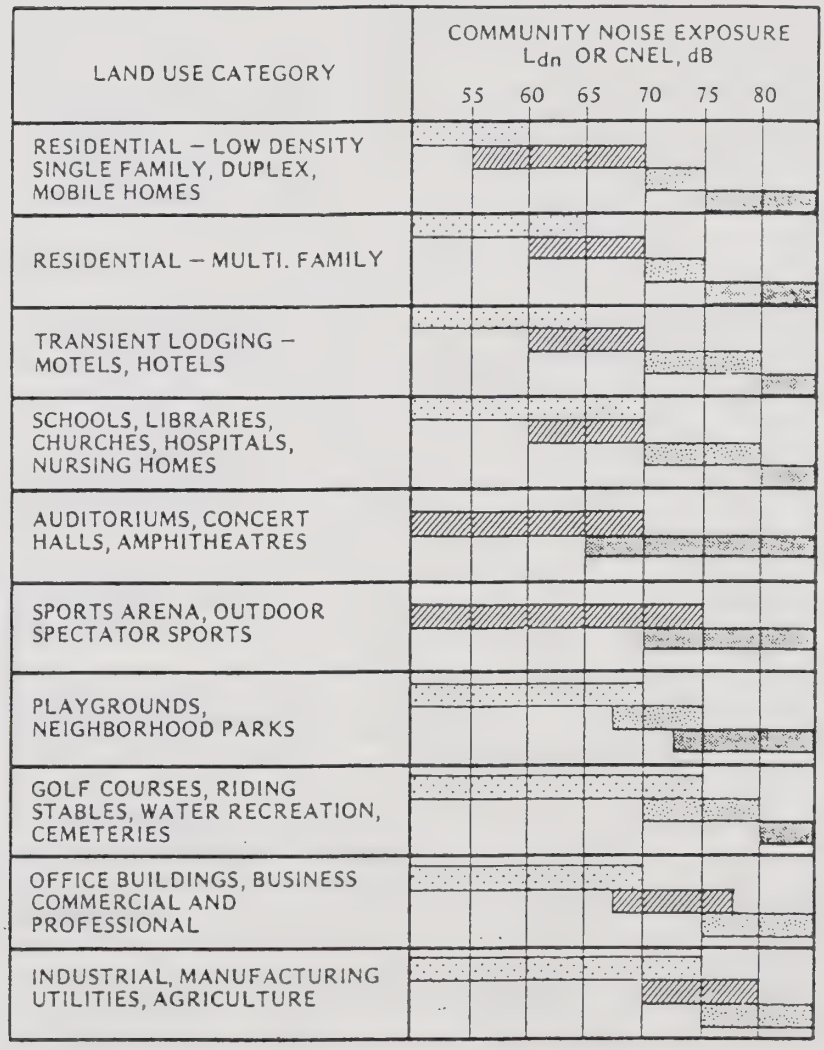
The California Department of Health Services (DHS) has published guidelines for the preparation of noise elements of local general plans. This city noise element is in compliance with those guidelines. The Guidelines include a noise level/land use compatibility chart, Figure 2, that categorizes various outdoor Ldn ranges into four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable), depending upon land use. For some land uses, the chart shows overlapping Ldn ranges of two or more computability categories. The City of Red Bluff, by adoption of this element, has adopted these standards for new development.

This Red Bluff General Plan Noise Element identifies the normally acceptable range for low-density residential uses as less than 60 db, while the conditionally acceptable range is 55-70 db. The normally acceptable range for medium and high-density residential uses is identified as Ldn values below 65 db, while the conditionally acceptable range is identified as 60-70 db. For educational and medical facilities, Ldn values below 70 db are considered normally acceptable, while Ldn values of 60-70 db are considered conditionally acceptable. For office and commercial land uses, Ldn values below 70 are considered normally acceptable, while Ldn values of 67.5 to 77.5 are categorized as conditionally acceptable.

The local standard for noise levels near existing airports in Tehama County is 60 dBA Ldn for residential areas or other sensitive receptors. Figure 3 from the Comprehensive Airport Land Use Plan shows detailed Airport/Land Use Noise Compatibility Criteria. A map of airport noise contours from that plan is also included here as Figure 4. Title 21 Section 5012 of the California Public Utilities Code states: "No airport proprietor of a noise problem airport shall operate an airport with a noise impact area based on the standard of 65 dB CNEL unless the operator has applied for or received a variance...". The Red Bluff

Figure 2.

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE–COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Figure 3.

AIRPORT/LAND USE NOISE COMPATIBILITY CRITERIA

LAND USE CATEGORY	CNEL or LDN, DBA 1/ 50-55	55-60	60-65	65-70	70-75
Residential					
single-family detached and duplexes	+	Ø	-	--	--
multi-family and transient lodging	++	+	Ø	-	--
mobile homes	+	-	-	--	--
Public					
schools, libraries, hospitals, nursing, homes	+	Ø	-	-	--
churches, auditoriums, concert halls	+	Ø	Ø	-	--
transportation, parking, cemeteries	++	++	++	+	Ø
Commercial and Industrial					
Offices, retail trade	++	+	Ø	Ø	-
Service commercial, wholesale trade, warehousing, light industrial	++	++	+	Ø	Ø
General manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
Cropland	++	++	++	++	+
Livestock breeding	++	+	Ø	Ø	-
Parks, playgrounds, zoos	++	+	+	Ø	-
Golf courses, riding stables, water recreation	++	++	+	Ø	Ø
Outdoor spectator sports	++	+	+	Ø	-
Amphitheaters	+	Ø	-	--	--

1/ See Fig. 4 for location of contours.

Figure 3. continued--

	LAND USE ACCEPTABILITY	INTERPRETATION/CONDITIONS
++	Clearly Acceptable	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	Normally Acceptable	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
Ø	Marginally Acceptable	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
-	Normally Unacceptable	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
--	Clearly Unacceptable	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

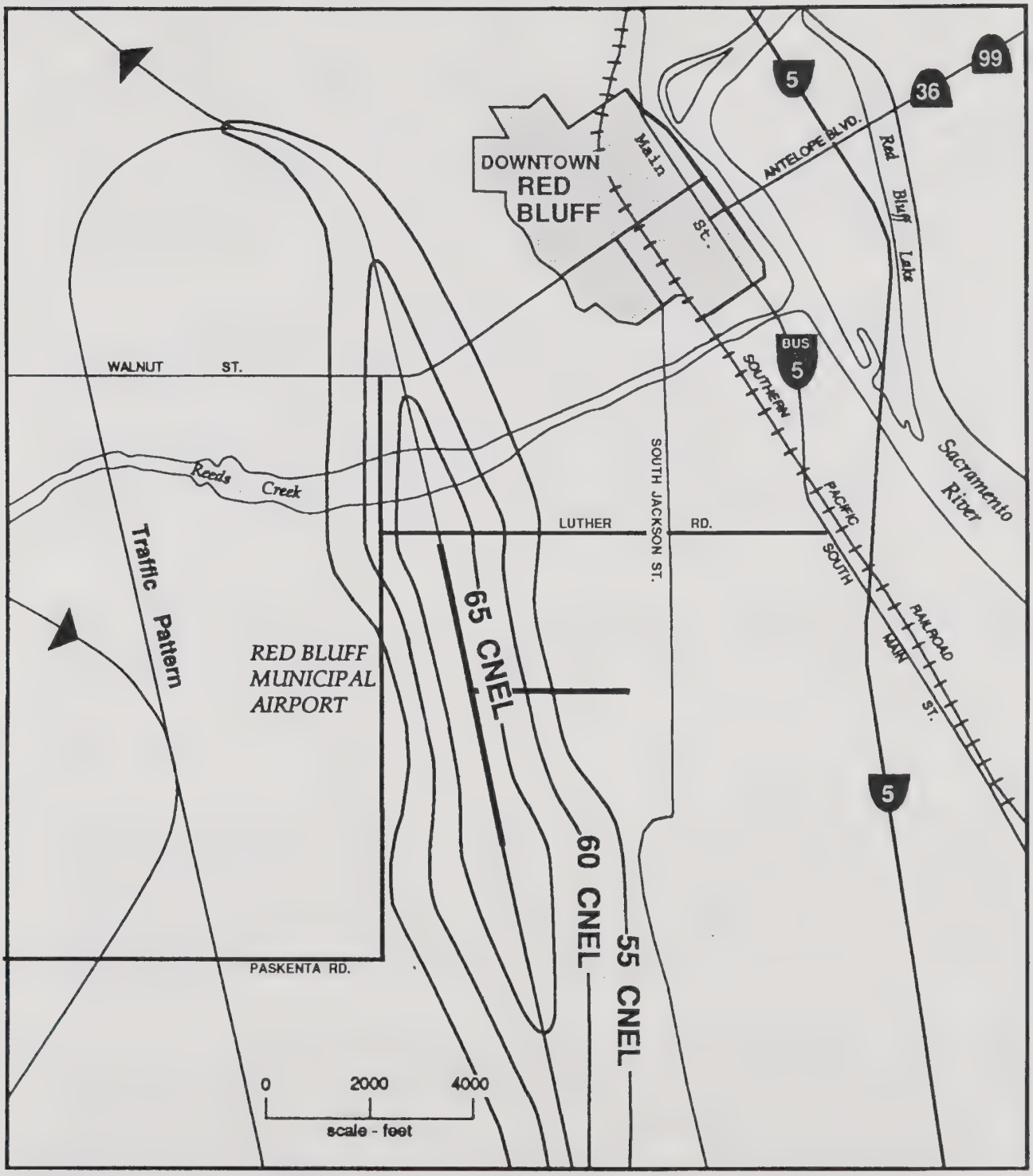


Figure 4. Red Bluff Airport Noise Contours

airport is not in violation of Section 5012 nor will it be in violation within the next fifteen years.

The relative acceptability or unacceptability of particular land uses with respect to the noise levels to which they would be exposed is indicated in the Airport/Land Use Noise Compatibility Criteria matrix. These criteria shall be the principal determinants of whether a proposed land use is compatible with the noise impact from a nearby airport, but special circumstances which would affect the specific proposal's sensitivity (e.g., the extent or lack of outdoor activity) also shall be taken into account.

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 Cal. Adm. Code 25-28). These standards require that "interior Ldn with windows closed, attributable to exterior sources, shall not exceed an annual Ldn of 45 db in any habitable room." These standards are required to apply to conditions for issuance of building permits for all such multifamily dwellings in California and all single family units to be located in Red Bluff.

The California Vehicle Code includes limits for noise emmissions from motor vehicles. Enforcement of these sectons (Figure 5) is done by the California Highway Patrol and local law enforcement agencies.

Noise Issues In Red Bluff

At various times throughout the spring of 1993, noise levels were recorded in several locations in Red Bluff. Both peak hour and 24 hour levels were recorded in 15 minute samples with a 13 Bruel and Kjar (B&K) Model 166 noise classifier which was calibrated before each set of readings was taken. Procedures for taking the sound level samples were those presented in FHWA-DP-45-1R "Sound Procedures for Measuring Highway Noise: Final Report."

The field readings were also used to calculate a computerized noise prediction model using EPA and Federal Highway Administration procedures for noise prediction. U.S. Department of Housing and Urban Development (HUD) Guidelines were used for railroad and aircraft noise prediction. The computer predicted levels approximate the field measurements within 1 to 3 dbA.

Current and predicted noise level contours in Red Bluff are presented in Figures 6, 7, 8 and 9. The 60 db contour lines on the map included in this element (Appendix A) indicate where there may be conditions exceeding of the City noise standards. When compared with the land use map and field observation it may be seen that the following locations are now experiencing or will experience noise problems in the future.

Figure 5.
CALIFORNIA VEHICLE CODE

27160. Motor Vehicle Noise Limits

(a) No person shall sell or offer for sale a new motor vehicle which produces a maximum noise exceeding the following noise limit at a distance of 50 feet from the centerline of travel under test procedures established by the department:

1)	Any motorcycle manufactured before 1970	92 dbA
2)	Any motorcycle, other than a motor-driven cycle, manufactured after 1969, and before 1973	88 dbA
3)	Any motorcycle, other than a motor-driven cycle, manufactured after 1972, and before 1975	86 dbA
4)	Any motorcycle, other than a motor-driven cycle, manufactured after 1974, and before 1978	80 dbA
5)	Any motorcycle, other than a motor-driven cycle, manufactured after 1977, and before 1988	75 dbA
6)	Any motorcycle, other than a motor-driven cycle, manufactured after 1987	70 dbA
7)	Any snowmobile manufactured after 1972	82 dbA
8)	Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured after 1972, and before 1975	88 dbA
9)	Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured after 1972, and before 1975	86 dbA
10)	Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured after 1974, and before 1978	83 dbA
11)	Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured after 1977, and before 1988	80 dbA
12)	Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured after 1987	70 dbA
13)	Any other motor vehicle manufactured after 1965, and before 1973	86 dbA
14)	Any other motor vehicle manufactured after 1972, and before 1975	84 dbA
15)	Any other motor vehicle manufactured after 1974, and before 1978	80 dbA
16)	Any other motor vehicle manufactured after 1977, and before 1988	75 dbA
17)	Any other motor vehicle manufactured after 1987	70 dbA

(b) Test procedures for compliance with this section shall be established by the department, taking into consideration the test procedures of the Society of Automotive Engineers.

Figure 6
Noise Contours From Major Streets
(Present)

STREETS

Antelope between:

Hwy/36E and Sale Lane

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
6200	.67	4154	100	50

*Sale Lane and Belle Mill

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
18765	.30	5629	120	57

*Belle Mill and Main

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
21344	.30	6403	130	65

Main and S. Jackson

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
7480	.30	2244	65	31

Main between:

Adobe and Walnut

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
8960	.30	2688	71	35

Walnut and Oak

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
10880	.30	3264	85	42

*Oak and Luther

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
15561	.40	6224	130	62

Luther between:

*Main and S. Jackson

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
11910	.40	4764	115	55

Walnut between:

Main and Dumosa

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
9960	.30	2988	80	37

S. Jackson Between:

Oak and Luther

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
7790	.40	3116	85	39

ADT = Average Daily Traffic Adj. = Adjustment
db/ft= Distance between noise source and contur line in feet
* = Intersections with adjustments for trucks

Figure 7
Noise Contours From Major Streets
(Buildout)

STREETS

Antelope between:

Hwy/36E and Sale Lane

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
8040	.67	5386	115	55

*Sale Lane and Belle Mill

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
21178	.30	6353	130	63

*Belle Mill and Main

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
24392	.30	7317	140	68

Main and S. Jackson

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
8470	.30	2622	73	35

Main between:

Adobe and Walnut

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
11200	.30	3360	85	40

Walnut and Oak

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
11560	.30	3468	89	42

*Oak and Luther

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
19441	.40	7776	150	70

Luther between:

*Main and S. Jackson

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
19337	.40	7734	148	69

Walnut between:

Main and Dumosa

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
19010	.30	5703	120	58

S. Jackson Between:

Oak and Luther

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
14160	.40	5664	119	56

*Denotes truck adjustments

Figure 8
Freeway Noise Contours
(Present and Buildout)

Present

South Main Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
29814	1.4	41739	460	210

Diamond Ave. Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
30582	1.4	42814	465	220

Antelope Blvd. Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
33909	1.4	47472	490	248

Buildout

South Main Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
32795	1.4	45913	485	240

Diamond Ave. Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
33640	1.4	47096	495	245

Antelope Blvd. Interchange

ADT	Speed/Adj	Adj/ADT	60db/ft	65db/ft
37299	1.4	52218	530	275

Figure 9
Railroad Noise Contours
(Present and Future)

Total average trains per 24 hours: 17.1

Day operations: 59% 7am-7pm = 10.1 trips
Night operations: 41% 7pm-7am = 7.0 trips

Daytime

Volume	Horn/adj	Speed/adj	Vol/adj	60db/ft	65db/ft
10.1	10	.75	75.75	700	340

Nighttime

Volume	Horn/adj	Speed/adj	Vol/adj	60db/ft	65db/ft
7.0	10	.75	52.50	560	270

Note: Contours mapped are the higher (daytime) sound levels

Operations data obtained from Richard McCloskey, Transportation Officer, Southern Pacific Transportation Co.

Areas affected by noise from freeway traffic and lying within the 60 dBA contours include:

All developable areas on Messer Road

The eastern portions of Brearcliffe and Homestead Drives

The easternmost portions of Walton and Wenmark Roads

The area zoned R-Mf adjacent to the west side of the freeway south of the Antelope interchange

The R-L area transected by Adobe Road bounded on the west by Main Street and on the east by I-5

The area east of I-5 south of Grasshopper Creek in the R-L zone

Areas affected by both freeway and railroad noise are the R-L and R-Lf areas east of Montgomery Street and west of South Main Street and any areas considered for development between Hess Road and Interstate-5.

The River Oaks Mobil Home Park west of the I-5 corridor near the downtown area is subject to noise from the highway which has been reported to Caltrans. At the edge of the freeway right-of-way the L10 (peak) noise level is 75 dBA. At vacant spaces 80 feet distant from the edge of the right-of-way the recorded level is 72 dBA. The exceeds the City standard for new construction.

Areas throughout the City affected by railroad operations are:

Montgomery Road, Hinkle Road, James Avenue, Duncan Road, and Thompson Place

The area north of Breckenridge Street, east of a line along Jefferson Avenue and Oriole Drive extending to Highway 36, and east to the railroad

The area between Hess Road and the railroad

South of Oak Street along Madison Street, west of Washington Street to Willow Street on the south and east of the railroad

Part of the noise impact area, the Ingot Estates Subdivision, required a special railroad noise study which indicated that:

> Calculations of the day-night noise level (Ldn), using the HUD model, produce values of 79 dB at 100 feet and 76 dB at 150 feet. The 65 dB Ldn line lies 600 feet from the edge of the tracks. The factor with the greatest influence of these

Ldn values is the presence of the grade crossing and the need to use warning horns by trains within one-quarter mile of the crossing.

Areas within the 60 dBA airport noise contour are:

South of Walnut Street, east of Michael Drive, north of Stonybrook Drive and west of David Avenue

North of Walnut, south of Brickyard Creek, east of Baker Road and west of Hook Road zoned R-L and R-Lf.

Homes on Paskenta Road west to Michael Drive, north of Stonybrook Drive and south of Walnut Street

The only sensitive residential area affected by traffic noise from City arterials includes the homes facing South Main Street between Willow Street and Aloha Street.

Other sensitive receptors within the 60 dBA contours are:

Tehama County Library, 645 Madison St. (railroad)

Brentwood Convalescent Hospital, 1795 Walnut Street (Airport)

St. Elizabeth Community Hospital, 2550 Sister Mary Columbia Dr. (freeway)

Antelope School, 22630 Antelope Blvd. (arterial)

Jackson Heights School, 225 Jackson Street (railroad)

Noise from local truck traffic is particularly noticeable on Antelope Blvd., Walnut Street, Luther Road, Main Street and Jackson Street. Again, this is generally within the City standards for nonresidential land uses but noise from diesel engines and refrigerator box motors left on for extended periods of time could cause complaints.

The most frequent noise complaints to the City Police Department is usually from barking dogs or from social events (parties) in residential areas. Both of these situations are more in the form of annoyances best addressed with a noise ordinance rather than with land use regulations.

It is expected that some periodic peak noises from agricultural operations in the area may exceed desired ambient levels. There is no accepted standard for these levels and they are not considered a significant problem in Red Bluff.

The Red Bluff Airport Land Use Plan states: "The 2005 60 CNEL (Ldn) contour is as shown on the Airport Master Plan and affects little territory outside the airport boundary."

Findings

Objectionable noise from transportation facilities and stationary sources can have, and in some areas do have, a significant potential for impact on public health and welfare.

Future development along railroad lines and highways, if allowed, could cause significant noise problems.

Residential development near the airport, if allowed, could cause significant noise problems.

Some land uses in Red Bluff are not currently compatible with existing noise levels and activities.

The Land Use element of the Red Bluff General Plan states: "The expected growth and development in Red Bluff will increase noise levels along principal arterials and collector roadways and will expose people to elevated noise levels along those and the railroad corridors through the community" (p.45).

Goals, Policies and Implementation Measures

Noise Goals

1. Reduce outdoor noise levels in existing residential areas where economically and aesthetically feasible.

2. Ensure that new development conforms to City noise level standards.

3. Locate new noise sensitive land uses away from noise sources unless mitigation measures are included in development plans.

5. Correct or prevent point source noises that have been demonstrated to be annoying to nearby residents.

6. Plan and design new streets or other public facilities to minimize noise in adjacent areas.

7. Follow policies and noise mitigation measures contained in the Airport Land Use Master Plan adopted by the Tehama County Airport Land Use Commission.

Noise Policies

1. Establish buffer areas between sensitive land uses and noise sources.

2. Establish buffers where necessary to ensure that residential, hospital, retirement care and recreational areas are not particularly subject to excessive noise levels.

3. Require noise mitigation measures when new residences are built in proximity to major transportation facilities.

4. Adopt and implement section III D (page 58) of the Red Bluff Land Development Policies in the Land Use Element to set noise buffering standards within the noise corridors.

5. Require environmental impact reports and/or project initial studies to include a thorough noise analysis for residential projects and all other projects involving other sensitive receptors such as schools and health care facilities. All new projects within the noise overlay zones shall also require a project level noise analysis.

6. Encourage and plan for airport development and discourage noise-sensitive activities near the municipal airport.

7. Locate recreational activities that have a potential to cause excessive noise away from noise sensitive land uses.

Noise Programs

1. Adopt and enforce an appropriate noise ordinance.

The City of Red Bluff is considering the adoption of a noise ordinance to regulate noise sources located on private property. The ordinance prohibits the generation of noise levels that increase background 15-minute Leq values by more than 5 dbA on adjoining residential property, or by more than 8 dbA on adjoining commercial or industrial property. The ordinance also prohibits noise sources on public property if background 15-minute Leq values are increased by more than 15 dbA at a distance of 25 feet from the noise source. The ordinance contains several exemptions for alarms and warning devices, daytime construction activities, emergencies, public safety activities, and related situations. The ordinance also provides a permit procedure to authorize exemptions for special events or situations where it is impractical to comply with ordinance provisions.

2. Utilize the noise corridor overlays as designated in the Land Use Element of the Red Bluff General Plan and delineated on Appendex A of this Noise Element.

A noise corridor overlay is proposed to be designated for all residential districts through which freeway, state highway or active railway rights-of-way are present. The corridor overlay shall require, at the discretion of the Planning Commission, a noise buffer between the noise source and occupied structures within the proposed development area. Use of the buffer zone may be required to comply with Title 24 criteria for multifamily dwellings and for the community noise level standards set forth in this General Plan Noise Element. The criteria for the overlay is as follows:

A. Buffer Zone Width

The following distances from the edge of the roadway to the nearest occupied structure, without a noise attenuation barrier at the edge of the right-of-way or at the occupied structure property boundary, may be required: Freeway corridor - 450 feet, Railroad Corridor - 600 feet, State highways and urban arterials - 100 feet. These distances can be greately reduced with the construction of noise barriers as close to the noise source as possible. These standards reflect worst case predictions of future noise impacts from transportation sources. See Appendex A for a more accurate deliniation of noise contours and the requirements of barriers or other mitigations may be modified after analysis by a qualified professional.

B. Barrier Specifications

Noise mitigation barriers should be constructed as specified in item 3 below.

C. Buffer Zone Uses

Vegetation and land contours should be retained whenever possible in the buffer zone. Only accessory structures and fencing are recommended for occupance of the buffer zones.

D. Density Transfer

Transfers of residential densities to accomodate noise buffer zones may be permitted in accordance with the character of the development site and by means of the approach given in Section III (B) of the Land Development Policies in the Land Use Element.

3. Implement staff and Planning Commission review of potential noise issues in new project location and design features.

By taking advantage of the natural shape and terrain of a site, it is often possible to arrange buildings and other uses in ways that will reduce or eliminate noise impacts. Site planning techniques include increasing the distance between the noise source and the receiver; placing non-noise sensitive land uses such as parking lots, maintenance facilities, and utility areas between the source and the receiver; using non-noise sensitive

structures such as garages to shield noise-sensitive areas; and orienting buildings to shield outdoor spaces from a noise source.

In many cases, noise reduction can be attained by careful layout of noise-sensitive spaces. Bedrooms, for example, should be placed away from busy roadways. Quiet outdoor spaces can be provided next to a noisy highway by creating a U-shaped development that faces away from the highway.

Noise barriers or walls are commonly used to reduce noise levels from ground transportation noise sources. Noise barriers serve a dual purpose in that they can reduce both outdoor and indoor noise levels. To be effective, a noise barrier must be large enough to prevent significant noise transmission through it. It also must be high and long enough to shield the receiver from the noise source. A safe minimum surface weight for a noise barrier is 3.5 pounds per square foot of masonry or similar construction. The barrier must be constructed so that there are no cracks or openings in it. **To be effective, a barrier must intercept the line of noise between the noise source and the receiver.**

An important and often overlooked consideration in the design of noise barriers is the phenomenon of "flanking." This is a term used to describe the manner by which a noise barrier's effectiveness is compromised by noise passing around the end of a barrier. Short barriers, regardless of height, provide little reduction in overall noise level. The effects of flanking can be minimized by blending the wall away from the noise source at the ends of the barrier.

If site planning, architectural layout, noise barriers, or a combination of these measures do not achieve the required noise reduction, walls, roofs, ceilings, doors, windows and other structural features of buildings may need to be modified.

4. Implement staff and Planning Commission analysis of potential noise problems in proposed rezonings and general plan amendments.

Where land use changes are being considered, it is appropriate to evaluate the potential for one land use to conflict with another through direct generation of noise or through generation of traffic which may, in turn, generate additional noise. New or revisions of City zoning and land use map designations should include requirements for distance buffers or constructed barriers between incompatible land uses before the proposed land use change is approved. It should not be the City's policy or procedure to approve land use changes that may create noise problems with the expectation that new development applicants will mitigate those problems.

5. Incorporate the noise mitigations identified in initial studies and EIRs for new projects as conditions for approval. Examples of such mitigations/conditions are:

   A. Development plans shall include features that will mitigate noise impacts originating from project development that will exceed General Plan Noise Element guidelines.

   B. Development plans shall include mitigation in the form of shielding or building insulation from off site noises that exceed General Plan Noise Element Standards on site.

   C. The owner shall retain a Certified Planner, Acoustical Engineer, or other qualified profes sional to design noise attenuation features for projects that present special acoustical prob lems.

   D. Construction activities shall be limited to daylight hours. Construction equipment shall be in good working condition and shall incorporate abatement measures shown in Figure 10 where deemed feasible by City staff.

   E. Acoustical Screening shall be provided around mechanical equipment in a manner approved by city staff.

6. For properties otherwise approved for development within one half mile of the municipal airport, within the Airport Land Use Planning Area delineated by the Tehama County Airport Land Use Commission and under the Air Traffic Pattern adopted by the City, a grant of avigation easement shall be required.

Such agreements should contain perpetual easement and right-of-way for the unobstructed passage of all aircraft in the air-space above the property and the right to cause in all airspace above the surface of the property such noise or other effects that may be caused by the operation of aircraft landing at, or taking off from, or operating at or on the Red Bluff Municipal Airport.

Figure 10.

Immediate Abatement Potential of Construction Equipment

Type of Equipment		Noise level in dBA at 50 feet			
		Present	With Feasible Noise Control[1]	Important Noise Sources[2]	Usage[3]
Earthmoving:	Front loader	79	75	E C F I H	0.4
	Backhoes	85	75	E C F I H	0.16
	Dozers	80	75	E C F I H	0.4
	Tractors	80	75	E C F I W	0.4
	Scrapers	88	80	E C F I W	0.4
	Graders	85	75	E C F I W	0.08
	Truck	91	75	E C F I T	0.4
	Paver	89	80	E D F I	0.1
Materials Handling:	Concrete mixer	85	75	E C F W T	0.4
	Concrete pump	82	75	E C H	0.4
	Crane	83	75	E C F I T	0.16
	Derrick	88	75	E C F I T	0.16
Stationary:	Pumps	76	75	E C	1.0
	Generators	78	75	E C	1.0
	Compressors	81	75	E C H I	1.0
Impact:	Pile drivers	101	95	W P E	0.04
	Jack hammers	88	75	P W E C	0.1
	Rock drills	98	80	W E P	0.04
	Pneumatic tools	86	80	P W E C	0.16
Other:	Saws	78	75	W	0.04
	Vibrator	76	75	W E C	0.4

(1) Estimated levels obtainable by selecting quieter procedures or machines and implementing noise control features requiring no major redesign or extreme cost.

(2) In order of importance:

T = power transmission system, gearing
C = engine casing
E = engine exhaust
P = pneumatic exhause
F = cooling fan
W = tool-work interaction
I = engine intake

(3) Percentage of time equipment is operating at noisiest mode in most used phase on site.

Source: Bolt, Beranek & Newman, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, EPA, 1971.

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